

REMARKS

1. In the above-captioned Office Action, the Examiner rejected claims 1-13, 16-20, and 23-26 under 35 U.S.C. §102(b) in view of Faletti et al. (U.S. Patent No. 5,813,231). Claims 1-7 and 14-24 were rejected under 35 U.S.C. §102(b) in view of Hu (U.S. Patent No. 6,125,828). These rejections are traversed and reconsideration is hereby respectfully requested.

2. Claims 1-13, 16-20, and 23-26 were rejected under 35 U.S.C. §102(b) in view of Faletti. Prior to discussing the merits of the Examiner's position, the applicant believes it would be helpful to first briefly describe and characterize the Faletti reference.

THE FALETTI REFERENCE

As stated in Faletti:

A brake control according to the present invention permits high braking levels to be achieved and affords a high degree of controllability of engine braking [Column 3, lines 3-5].

As seen in FIG. 4, during operation in a braking mode, the exhaust valves 40 of each cylinder 34 are opened at a time t_1 prior to TDC so that the work expended in compressing the gases within the cylinder 34 is not recovered by the crankshaft 42 [Column 5, lines 28-32].

As the foregoing discussion demonstrates, engine braking can be accomplished by opening the exhaust valves in some or all of the engine cylinders at a point just prior to TDC. As an alternative, the exhaust valve(s) associated with each cylinder may also be opened at a point near bottom dead center (BDC) [Column 15, lines 51-56].

Faletti therefore describes an engine brake that opens the exhaust valves of an engine just prior to TDC or near BDC, and thus describes engine braking dependent on the position of a fixed timing mechanism. Faletti does *not* describe control of a valve *independent* of the *position* of a fixed timing mechanism. Therefore, Faletti does *not* describe a valve actuator for controlling operation of a valve *independent* of *position* of the fixed timing mechanism, as described in independent claims 1 and 8, nor controlling operation of a valve via a valve actuator *independent* of *position* of the fixed timing mechanism, as described in independent claims 13 and 20. Hence, independent claims 1, 8, 13, and 20 are shown to be allowable over Faletti. For similar reasons, Faletti also fails to teach many of the dependent claims.

3. Claims 1-7 and 14-24 were rejected under 35 U.S.C. §102(b) in view of Hu. Prior to discussing the merits of the Examiner's position, the applicant believes it would be helpful to first briefly describe and characterize the Hu reference.

THE HU REFERENCE

As stated in Hu:

It is therefore an object of this invention to provide improved and simplified hydraulic circuitry which can be used to more extensively modify the operation of engine cylinder valves in response to engine cams [Column 2, lines 24-27].

It is another object of this invention to provide relatively simple hydraulic circuitry which can be used selectively to partly or completely suppress any engine valve operation associated with the engine cam that otherwise controls that engine valve, for example with the engine between positive power mode operation, compression release engine braking mode operation and exhaust gas recirculation mode operation and/or to adjust the timing of engine valve openings for various engine operating conditions [Column 2, lines 28-36].

The hydraulic circuit is preferably constructed so that when the electrically operated hydraulic valve relieves hydraulic fluid pressure in that circuit, there is sufficient lost motion between the mechanical input to the circuit and the mechanical output from the circuit to prevent any selected cam function or functions including but not limited to engine braking, compression release retarding, and exhaust gas recirculation from being transmitted to the engine valve associated with that cam [Column 2, lines 46-55].

Hu therefore describes an engine in which a cam provides the only source of hydraulic pressure that opens an exhaust valve 30, as shown in FIG. 1 and its associated text. When the various lobes 42a, 42b, or 42c of 60 are in position below piston 60, the exhaust valve 30 may be opened. Various circuitry on the left-hand side of FIG. 1 is utilized to relieve the pressure that opens the exhaust valve 30. When this circuitry is activated, lost motion is created, thereby providing the ability to delay the opening of the exhaust valve 30, close an open exhaust valve early, or prevent the opening of the exhaust valve entirely. Hu teaches controlling operation of a valve *dependent* on position of his cam, which is a fixed timing mechanism. Therefore, Hu does *not* describe a valve actuator for controlling operation of a valve *independent* of *position* of the fixed timing mechanism, as described in independent claims 1 and 8, nor controlling operation of a valve via a valve actuator *independent* of *position* of the fixed timing mechanism, as described in independent claims 13 and 20. Because Hu's system is dependent on the position of the cam to be able to hold a valve open, Hu cannot open a valve early or

leave it open late, as described in dependent claims 14-17 and 21-24, whereas the present invention controls operation of the valve *independent* of the position of the fixed timing mechanism, and thus can open or close a valve at any time, no matter what the position of the fixed timing mechanism is, and thus provides the benefits of opening and closing on demand that Hu cannot provide. Hence, independent claims 1, 8, 13, and 20, as well as dependent claims 14-17 and 21-24, are shown to be allowable over Hu.

4. Because neither Faletti nor Hu teaches the claims of the present invention, the applicant respectfully submits that claims 1, 8, 13, and 20 may be passed to allowance.

Furthermore, claims 2-7, 9-12, 14-19, and 21-26 are dependent upon an independent claim that is shown to be allowable. For all these reasons, the dependent claims are themselves allowable.

Neither Faletti nor Hu teaches or suggests the elements of new claims 27-32.

5. No new subject matter is introduced by the amendments to the above claims or the addition of the new claims.

6. The Examiner is invited to contact the undersigned by telephone or facsimile if the Examiner believes that such a communication may advance the prosecution of the present application. Notice of allowance of claims 1-32 is hereby respectfully requested.

Respectfully submitted,

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